 5	Title: YALE OFFICE OF FACILITIES PROCEDURE MANUAL Chapter: 01 - Yale Design Standard Division: Electrical Standards	Section: 26 24.06 Enclosed Bus Assemblies
		Date: 2/21/20
		Author: Office of Facilities
CC: Project Folder		

Change History

Date	Description of Change	Pages / Sections Modified	Change Approver Initials
2/21/20	Added IEEE Standard. Updated equipment requirements to include anti-condensation and forced-cooled measures. Added IEEE testing requirements.	Section D Standards Section G numbers 5/6 Section I number 3	JR
6/15/16	Updated division section from 16450 to 26 24 06, removed references to other section	-	mgl44

A. Summary

This section contains design criteria for enclosed bus ducts rated at 225 amperes and higher.

B. System Design and Performance Requirements

1. Size bus ducts at standard ratings equal to or greater than the smaller of the following:
 - 160 percent of the connected load
 - The full-load transformer rating on the line side of busway
2. Bus ducts must be derated where ambient temperatures are expected to exceed 40°C.
3. Do not run bus ducts through fire-rated walls or partitions, unless fittings are specifically listed for such use.
4. Size busses in accordance with the NEC.

C. Submittals

Submit the following design and construction documentation.


1. Designer Submittals

Submit calculations for sizing bus ducts.

2. Construction Documents

Submit shop drawings and product data.

D. Product Standards

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Ensure that all products conform to the following standards:

- NEMA BU1, Busways
- UL 857, Busways and Associated Fittings
- IEEE Std. C37.23 Standard for Metal-Enclosed Bus

E. Manufacturers

Subject to compliance with the design requirements, provide products by one of the following manufacturers:


- General Electric
- Square D
- Eaton

F. Materials

1. Use plated copper bus bars with polyester insulation or barriers to isolate the bus bars from each other and from the housing.
2. Use steel housings with an enamel finish.

G. Equipment

1. Except where feeder-types are specifically required, bus ducts must be plug-in types consisting of standard 10-foot sections, with special sections and fittings necessary to suit the installation. Feeder sections must be interchangeable without the use of special joint covers.
2. Neutral busses shall be the same size as phases. Specify an internal ground bus sized at 50 percent of the phase bus rating. Design busways for a maximum 55°C temperature rise above a 40°C ambient temperature. Brace busways to withstand a minimum 50,000-ampere short-circuit current or sized for the requirement per the submitted short circuit study.
3. Joints for busways rated at 600 amperes and higher must be of single-bolt design and permit safe testing of tightness without de-energizing. One side of the bus duct must be removable for access without disturbing adjacent sections. Provide joint covers with captive hardware.
4. Bus ducts must be non-ventilated and capable of being mounted in any position without derating. Horizontal runs must be suitable for hanging on 10-foot centers. On vertical runs, provide one adjustable hanger per floor.
5. Totally enclosed non-ventilated bus assemblies shall be provided with anti-

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condensation heaters in a quantity and rating sufficient to minimize condensation. Heaters shall be thermostatically controlled.

6. Auxiliary equipment may be used to force-cool the bus assembly. In these cases, a self and forced cooled rating shall be indicated.
7. Bus plugs must be circuit breaker types, but fused disconnect types may be used to feed individual motor circuits, if plugs are readily accessible.

H. Installation Guidelines

1. Run horizontal bus ducts at ceiling level.
2. Provide expansion fittings where straight runs exceed 150 feet and where runs of bus duct cross building expansion joints.
3. Bus ducts shall be grounded every 100 feet and connected with a 4/0 ground conductor to the building grounding system.

I. Quality Control

1. Test with megohmmeter or high potential voltage prior to energizing to be sure that excessive leakage paths between phases and ground do not exist.
2. Verify that a proper phase relationship exists between the bus duct and associated equipment.
3. Design Tests, Factory Tests, and Field Tests shall be accordance with Section 6 of IEEE C37.23.

“END OF SECTION”